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ALIMENTARY TRACT

Health-Related Quality of Life After Ileoanal Pull-Through: Evaluation and Assessment of New Health Status Measures

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Background & Aims: **Health-related quality of life (HRQL) after proctocolectomy is a critical parameter for management decisions in patients with chronic pancolitis. The aim of this study was to evaluate the HRQL of patients with ileoanal pull-through and to validate new, easy-to-administer HRQL measures.** ***Methods:*** **The Sickness Impact Profile (SIP), Short Form 36 (SF-36), Rating Form of Inflammatory Bowel Disease (IBD) Patient Concerns (RFIPC), and the time trade-off (TTO) were used to measure HRQL of pull-through patients. The SF-36 and the RFIPC were validated.** ***Results:*** **HRQL of patients with ileoanal pull-through was better than that of a national sample of patients with IBD (SIP and RFIPC) and similar to that of a normal population (SF-36). Physical and psychosocial subscales of the SF-36 correlated with the SIP, affirming the construct validity of the SF-36. The RFIPC results correlated with the SIP and SF-36 results, suggesting that it is also a valid health status measure for these patients. TTO results correlated with the physical subscales of the SIP and SF-36, reflecting the impact of physical health on this group.** ***Conclusions:*** **HRQL of patients with ileoanal pull-through is excellent. The SF-36 and RFIPC are valid health status measures that can be used by clinicians and researchers in these patients.**

Ulcerative colitis is a chronic inflammatory condition of the large intestine of unknown etiology. Patients with long-standing colitis involving the entire colon (pancolitis) are at increased risk for colon cancer.[1] Because of this cancer risk, prophylactic proctocolectomy after 10 years of pancolitis[2,3] and periodic colonoscopy with biopsies (colonoscopic surveillance)[4] with colectomy for dysplasia or cancer have been recommended. The health-related quality of life (HRQL) after proctocolectomy is a critical parameter for management decisions with this group. This critical parameter has been estimated with clinical measurements, including stool frequency and continence. Although these indices provide information on the technical outcome of the procedure, they do not provide data on HRQL after colectomy. HRQL is multidimensional, incorporating physical, psychosocial, and emotional functional status, and quality of life or patient preferences (utilities) for different health states. The measurement of HRQL differs from the measurement of disease in that its evaluation must include psychosocial as well as disease-related factors. Furthermore, the validation rests with the patient because the contributing psychosocial determinants are not accessible through laboratory tests.[5] Previous studies have estimated postoperative quality of life nonquantitatively with mailed questionnaires and face-to-face interviews. However, the information obtained from these studies is limited because it is impossible to compare their results with the measured quality of life of other patient groups such as diabetics and dialysis patients.

Recently, total proctocolectomy with ileoanal anastomosis has become a popular alternative to conventional ileostomy. Quality of life after ileoanal anastomosis has been measured using generic or general health status measures, including the Sickness Impact Profile (SIP)[6] and the time trade-off technique (TTO).[7] The results suggest that the postoperative HRQL of this group is excellent, and they provide a basis for comparison with HRQL of other patient groups.[8]

The goals of our study were to measure HRQL of patients with ileoanal pull-through and to validate two

Abbreviations used in this paper: HRQL, health-related quality of life; RFIPC, Rating Form of Inflammatory Bowel Disease Patient Concerns; SF-36, Short Form 36; SIP, Sickness Impact Profile; TTO, time trade-off.

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recently developed health status measures, the Short Form 36 (SF-36)[9] (a general or generic health status measure) and the Rating Form of Inflammatory Bowel Disease (IBD) Patient Concerns (RFIPC),[10] a disease-specific health status measure for patients with IBD. The aim of our study was to correlate the results with those obtained with the previously used SIP[6] and TTO.[7]

Materials and Methods

Patients

All patients with a history of ulcerative colitis who had undergone proctocolectomy and ileal pouch–anal anastomosis from July 1, 1993, to June 30, 1994, at Duke University Medical Center, the Durham VA Medical Center, and the University of North Carolina Hospitals were eligible for the study. Patients were contacted initially by letter, which was followed by a telephone call to further explain the nature of the study. The study was approved by the Human Investigational Review Boards of Duke University, the Durham VA Medical Center, and the University of North Carolina.

Study Instruments

Important components of HRQL measures are their discriminative ability, e.g., their ability to distinguish between those with a better or worse quality of life, and their responsiveness, or their ability to detect changes in health status with time or in response to specific interventions. For patients with ileoanal pull-through, a discriminative instrument would compare their HRQL with that of other patient groups such as patients with rheumatoid arthritis and diabetics. Similarly, an evaluative measure is one that would capture preoperative to postoperative changes in HRQL. The types of instruments available include generic measures and disease-specific measures. Generic measures are designed to evaluate all important aspects of HRQL of multiple patient groups. Disease-specific measures focus on the special status and concerns of patients with a particular disease. The type of instrument used depends on the purpose of the assessment. Generic instruments permit comparisons among different patient groups and populations and would be appropriate for comparative studies or those that are designed to determine health policy. Because disease-specific measures focus on the aspects of HRQL that are specific to a given patient group, they may be more responsive to changes in health status and would therefore be appropriate for clinical trials or other studies that measure a response to an intervention. Our goal was to measure the health status and quality of life of patients with ileoanal pull-through and compare it with the quality of life of other groups. Therefore, we chose the two generic health status measures (the SIP and the SF-36). We planned to validate a newer health status measure, the SF-36, by comparing the results to those obtained with the SIP. In addition, we measured quality of life using the TTO, another generic measure that examines patient preferences for health states. Scores on these study instruments were compared with scores of a national sample of patients who were members of the Crohn's and Colitis Foundation of America[11] (SIP and RFIPC), a normative population (SF-36), patients who had undergone esophagectomy, and patients with esophageal disorders, including gastroesophageal reflux and achalasia (TTO).

Because we believed that the unique concerns of patients with ileoanal pull-through might be similar to those of patients with IBD and because there is no disease-specific measure for ileoanal pull-through patients, we used the RFIPC, a disease-specific measure, and correlated the results with those obtained from the SIP[6] and the SF-36.[9]

The SIP is a generic health status measure that encompasses 12 discrete areas of daily function. There is an overall score; a physical domain that includes three subscales (ambulation, mobility, and bodily care and movement); a psychosocial domain that contains the subscales of social interaction, communication, alertness behavior, and emotional behavior; and five independent domains (sleep and rest, eating, work, home management and recreation, and pastimes). The sensitivity of the SIP[6] for detecting changes with time has been demonstrated in multiple groups,[8] and its responsiveness to changes in health status has been shown in patients with IBD.[8] The SIP[6] was developed to measure changes in perceived health status that occur over time or between groups. Validated in patients with hyperthyroidism, rheumatoid arthritis, and hip replacements, it is a behaviorally based measure of sickness-related dysfunction that provides a reliable, valid, and sensitive measure of health status. The SIP requires approximately 30 minutes to complete. Because the SIP was designed for patients with a variety of medical disorders, it is general or generic in its focus. Although the HRQL of patients with ileoanal pull-through is excellent when measured with the SIP, it may not address the concerns or specific issues of these patients. For example, the SIP asks a series of questions related to mobility and ability to dress oneself. Although these may be important measures of health status in, e.g., patients with rheumatoid arthritis, most patients with ileoanal pull-through will have normal or near-normal functioning in these areas and thus, their disability may not be revealed by these questions.

The SF-36[9] is a 36-item questionnaire that measures three major health attributes: (1) health status (physical functioning, social functioning, role limitations because of physical problems, role limitations because of emotional problems); (2) well-being (mental health, energy and fatigue, pain); and (3) an overall evaluation of health. Validated as part of the Medical Outcomes Study,[12] the SF-36 was created for clinicians as a practical method for monitoring patient outcomes in routine practice settings. The SF-36 has been used to measure the presence or absence of disease and its severity and to predict subsequent transitions in health status, expenditures, utilization, and mortality. The scale has been validated in multiple populations, including dialysis patients,[13] diabetics,[14] and elderly veterans.[15]

Both of the generic health profiles we used were shown to have discriminative ability and thus can be used to compare the health status of patients with ulcerative colitis and those

with ileoanal pull-through with the health status of other groups.[12] These instruments have also been used to assess changes in health status with time. Thus, they are evaluative measures as well and can be used to show changes in health status after colectomy.

Utility measures, another type of generic health status measure, are derived from economic and decision theory. They measure patient preferences for health states and relate them to death. The TTO,[7] a typical utility measure, asks the respondent to choose between a longer life expectancy (time t) in a less healthy state (state *i*) and a shorter life expectancy (time x) in a perfect or excellent state of health. Preference values are derived implicitly based on individual responses to decision situations, e.g., "Would you rather live 10 years with a colectomy or 5 years in perfect health?" The time in the state of perfect health (time x) is varied until the respondent is indifferent between the two alternatives. At the point of indifference, the required preference value for state *i* is given by $h_i = x/t$. For example, if the individual believes that living 10 years with a colectomy is equivalent to living 5 years in perfect health, the TTO score is 5/10 or 0.5. A score of 0 is equivalent to being dead, and a score of 1 is equivalent to a state of perfect health. The TTO has been administered to diverse populations, including patients with ileoanal pull-through[8] and those receiving long-term home total parenteral nutrition.[16] Measured values are reported as reliable and stable.[17] Utility measures are both discriminative and evaluative, and thus have been used to detect differences in quality of life among patient groups and changes in quality of life with time or after treatment. However, this overall measure of HRQL does not permit us to determine which dimensions, e.g., physical, psychosocial, or emotional, are the most important components of the individual's quality of life.

The RFIPC[10] is a disease-specific 25-item measure of perceived health status that was standardized in a national study of patients with IBD. Factor analysis yielded the following four indices: (1) impact of disease, (2) sexual intimacy, (3) complications of disease, and (4) body stigma. The RFIPC was designed for patients with IBD. Unlike traditional psychological measures, the RFIPC was shown to be syntonic with the concerns of IBD patients. The severity of the concerns correlated with the patient's psychological well-being and daily function. This suggests that identifying and addressing patient concerns through education or counseling may improve their health status.[5] If the RFIPC also reflects the concerns of patients with ileoanal pull-through, its use might provide the opportunity for education and counseling to improve the health status of this group. Because there is no disease-specific health status measure for ileoanal pull-through patients, and the RFIPC considers aspects of physical and psychosocial functioning that may be of concern to these patients (e.g., loss of bowel control), it may be a valid health status measure for patients with ileoanal pull-through.

To validate the newer SF-36[9] and the RFIPC[10] in patients with ileoanal pull-through, we examined the construct validity of these newer measures. Construct validity refers to the ability of the instrument to measure what it claims to measure. In other words, an HRQL instrument will have good construct validity if the results obtained with the instrument correlate well with other valid HRQL measures. We administered the SIP[6] and the TTO[7] (previously validated instruments) to each patient and correlated the results obtained with the SIP and the TTO with those obtained with the SF-36 and the RFIPC. Self-administered questionnaires (SIP, SF-36, and RFIPC) were mailed to the patients. A telephone interview was conducted by two of the authors (M.S. and W.T.) to perform the TTO.

Table 1. Operative Complications

	No. (%)
Intraoperative hemorrhage	1 (4.5)
Volume depletion (requiring admission)	2 (9)
Deep venous thrombosis	1 (4.5)
Partial small intestinal obstruction	1 (4.5)
Urinary tract infection	1 (4.5)
Compartment syndrome	1 (4.5)
Fistula (pouch)	1 (4.5)
Mucocele	1 (4.5)
Sepsis	1 (4.5)

Data Analysis

Results are expressed as medians and interquartile ranges (25%–75%). To provide a basis for comparison with our results, we compared the scores of our patients with ileoanal pull-through with those achieved by a national sample of patients with IBD (SIP and RFIPC), a sample of the normal population (SF-36), patients with a history of Barrett's esophagus who had undergone esophagectomy for cancer, and patients with esophageal disorders, including gastroesophageal reflux and achalasia (TTO). Because the data were not normally distributed, we used nonparametric tests (Wilcoxon's signed rank and Kruskall–Wallis test) and compared the median scores. Significance was set at the 0.05 level (two-sided). The Spearman's correlation coefficient was used to measure the degree of correlation between the newer measures and the previously validated SIP and TTO.

Results

Data are reported as medians with the interquartile ranges (25%–75%) shown in parenthesis. There were 14 men and 8 women with a median age of 39.5 years (interquartile range, 27–43 years). The disease had been present for a median of 7.5 years (interquartile range, 4–10 years) preoperatively. Three patients had undergone colectomy for dysplasia, whereas the remainder underwent surgery for refractory or severe colitis. Surgery was performed in two stages in all but 2 patients who required three-stage procedures. Patients had a mucosectomy with either a hand-sewn J-pouch to the dentate line,[18] or a stapled J-pouch to the dentate line.[19] A temporary loop ileostomy was created proximal to the

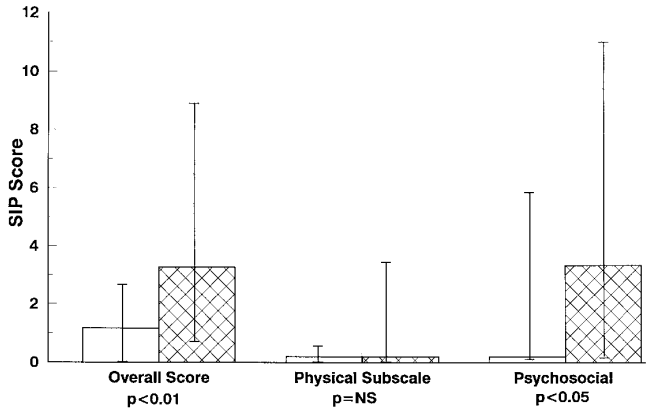

Figure 1. SIP results. Results are reported as medians and interquartile ranges (25%–75%) for patients with ileoanal pull-through (□) and Crohn's and Colitis Foundation of America patients (▩). Lower scores are associated with a better health status. See text for details.

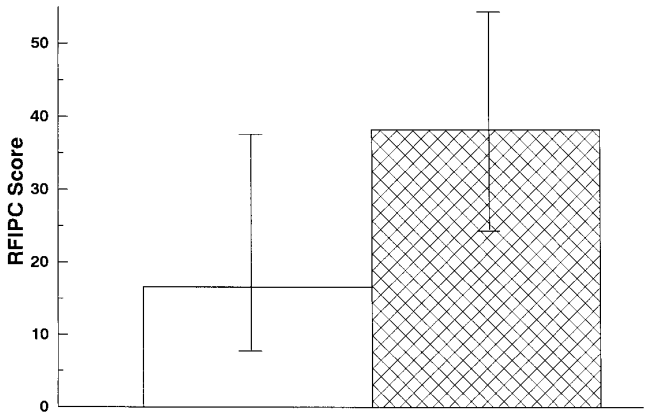

Figure 3. RFIPC results. Results are reported as medians and interquartile ranges (25%–75%) for patients with ileoanal pull-through (□) and Crohn's and Colitis Foundation of America patients (▩). Lower scores represent a better health status. See text for details.

rectal reconstruction for at least 6 weeks during healing. The second operation to take down the ileostomy was performed through the ileostomy site after direct examination and Gastrografin enema had documented complete healing of the pouch and anastomosis.[20] Postoperatively, the patients reported a mean of 5.1 stools in a 24-hour period and 40 stools per week (interquartile range, 10–70). Complications occurred in 8 patients (36%). Two patients experienced more than one adverse event (Table 1). Pouchitis occurred in 6 patients (27.2%).

The results of the SIP are shown in Figure 1. Lower scores on the SIP reflect a better health status. Patients with ileoanal pull-through achieved a median overall score of 1.2 (interquartile range, 0–2.8) on the SIP, which was significantly better than the health status of a national sample of patients with IBD, who achieved a score of 3.3 (interquartile range, 0.6–9.0; $P < 0.01$). Ileoanal pull-through patients also reported significantly better psychosocial health ($P < 0.05$), but there were no differences in physical health status among the groups.

The SF-36 results (Figure 2) were compared with a normal population.[21] Higher scores reflect a better health status. There were no significant differences between ileoanal pull-through patients and the normal population. As measured by the SF-36, the health status of patients with ileoanal pull-through is excellent.

The results of the RFIPC (Figure 3) suggest that ileoanal pull-through patients, with a median score of 16.6 (interquartile range, 5.2–38.9), have fewer concerns than a national sample of patients with IBD, whose median score was 38.3 (interquartile range, 22.8–53.9; $P < 0.01$). (Lower scores reflect a better health status.)

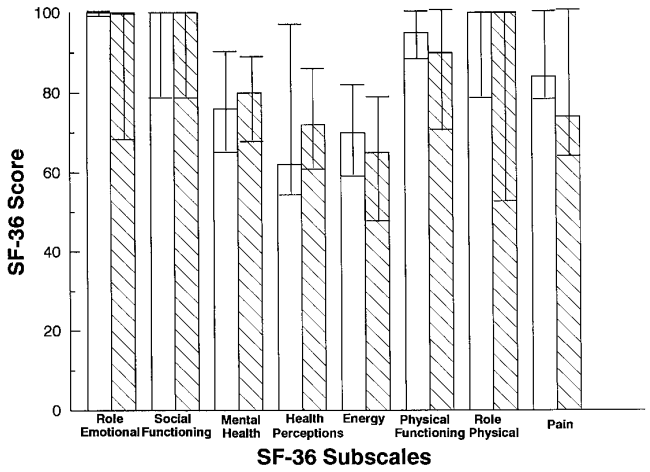

Figure 2. SF-36 results. Results are reported as medians and interquartile ranges (25%–75%) for patients with ileoanal pull-through (□) and normal comparison population (▧). Higher scores are associated with a better health status.

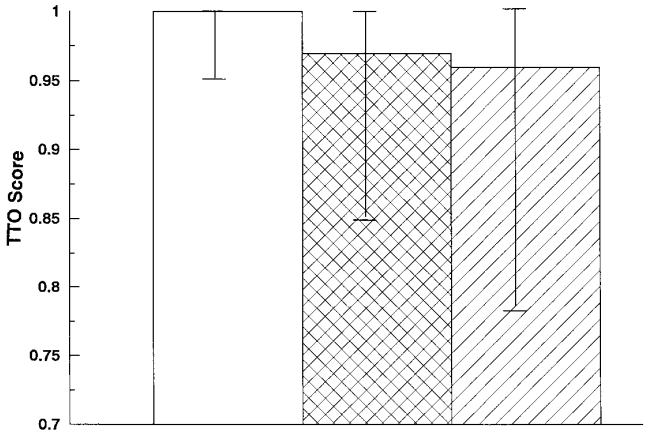

Figure 4. TTO results for patients with ileoanal pull-through (□), patients with a history of Barrett's esophagus who have undergone esophagectomy for adenocarcinoma (▩), and patients with a history of esophageal disorders (▨). 0, dead; 1, perfect health. See text for details.

Table 2. SF-36 and SIP Correlations

	SIP subscales			
	Physical		Psychosocial	
SF-36 subscales	*r* value	*P* value	*r* value	*P* value
General health perceptions	−0.56	0.01	−0.63	0.00
Energy/fatigue	−0.65	0.00	−0.52	0.01
Physical functioning	−0.37	0.09	−0.14	0.54
Physical role functioning	−0.78	0.00	−0.34	0.13
Pain	−0.73	0.00	−0.27	0.22
Emotional role functioning	−0.51	0.02	−0.52	0.01
Social functioning	−0.30	0.17	−0.45	0.04
Mental health	−0.20	0.37	−0.54	0.01

The results of the TTO are shown in Figure 4 (0 = dead; 1 = perfect health). Patients with ileoanal pull-through with a median score of 1.0 (interquartile range, 0.95–1.0), rate their quality of life as significantly better than patients with a history of Barrett's esophagus who have undergone esophagectomy for adenocarcinoma (median score, 0.97; interquartile range, 0.83–1.0; $P < 0.01$) and those with esophageal disorders (gastroesophageal reflux, achalasia) (median score, 0.96; interquartile range, 0.78–1.0; $P < 0.01$).

Spearman correlation coefficients are presented in Tables 1–4. Correlations between the SF-36 and the SIP are shown in Table 2. There was a close correlation ($r \geq 0.5$)[22] between the SIP physical subscale and the SF-36 subscales related to physical functioning, e.g., energy/fatigue, physical role functioning, and pain ($r = -0.65$, -0.78, and -0.73, respectively; $P < 0.01$). Some correlation ($r \geq 0.3$)[19] was noted between the SIP physical subscale and the physical functioning subscale of the SF-36 ($r = -0.37$), but this was not significant. There were close correlations between the psychosocial subscale of the SIP and the SF-36 subscales associated with emotional and mental health (general health perceptions, energy/fatigue, emotional role functioning, and mental health) ($r = -0.63$, -0.52, and -0.54, respectively; $P < 0.05$). These results support the construct validity of the SF-36 as a health status measure for patients with ileoanal pull-through.

Table 3. SIP, SF-36, and RFIPC Correlations

	RFIPC	
Subscale	*r* value	*P* value
SIP		
Physical	0.53	0.01
Psychosocial	0.43	0.05
SF-36		
General health perceptions	−0.53	0.02
Energy/fatigue	−0.50	0.02
Physical functioning	−0.47	0.03
Physical role functioning	−0.32	0.17
Pain	−0.62	0.003
Emotional role functioning	−0.51	0.02
Social functioning	−0.32	0.16
Mental health	−0.13	0.57

Table 4. SIP, SF-36, and TTO Correlations

	TTO	
Subscale	*r* value	*P* value
SIP		
Physical	−0.55	0.008
Psychosocial	−0.26	0.24
SF-36		
General health perceptions	0.33	0.14
Energy/fatigue	0.43	0.04
Physical functioning	0.46	0.03
Physical role functioning	0.51	0.02
Pain	0.40	0.06
Emotional role functioning	0.18	0.42
Social functioning	0.35	0.11
Mental health	0.02	0.93

We performed similar correlations between the SIP and SF-36 and the RFIPC and the TTO results. The correlation coefficients and *P* values are shown in Tables 3 and 4. Table 3 shows a close correlation between the SIP physical subscale and the RFIPC score ($r = 0.53$; $P < 0.05$) and some correlation between the psychosocial subscale and the RFIPC score ($r = 0.43$; P = NS). There were good correlations between the general health perceptions, energy/fatigue, pain, and the emotional role functioning subscales of the SF-36, and the RFIPC ($r = -0.53$, -0.50, -0.62, and -0.51, respectively; $P < 0.05$). The results suggest that patient concerns as measured by the RFIPC are an important component of health status, and that the RFIPC, like the SF-36, is a valid health status measure in patients with ileoanal pull-through. The correlations between the SIP, SF-36, and TTO are shown in Table 4. The TTO results correlated with the SIP physical subscale and the physical subscales of the SF-36, including energy/fatigue, physical functioning, and physical role functioning ($r = -0.55$, -0.46, -0.43, and 0.51, respectively; $P < 0.05$). These results suggest that physical function is an important component of HRQL in patients with ileoanal pull-through.

To further evaluate the role of physical function in the HRQL of the ileoanal pull-through patients, we performed a series of univariate analyses to determine if age, education level, percent of time without symptoms (from the onset of ulcerative colitis), and number of bowel movements each week was correlated with the postoperative physical functioning and general health perception

subscales of the SF-36, which are two important components of physical status. There was no correlation between any of measured variables and postoperative physical functioning. In a second analysis, we used the general health perceptions subscale (a measure of patients beliefs about their health status) as our outcome measure. The results showed a correlation between increasing age and general health perception that approached significance ($r = 0.4$; $P = 0.07$). The only variable that was significantly correlated with general health perception postoperatively was the number of bowel movements each week. To further explore the effect of age and number of bowel movements each week on general health perception, we performed a multivariate (linear regression) analysis. The results were significant ($P = 0.05$) and verified that age and number of bowel movements each week were predictive of general health perception postoperatively. Of the two variables, the number of bowel movements each week was most predictive of postoperative general health perception ($P = 0.02$).

Discussion

Our results affirm results of a previous study of patients with ileoanal pull-through suggesting that health status and quality of life is excellent in this group.[9] The significant correlations between the physical and psychosocial subscales of the SIP and the corresponding subscales of the SF-36 support the construct validity of the SF-36 as a health status measure for patients with ileoanal pull-through. The ease of administration and widespread use of the SF-36 make it an attractive alternative to the SIP for future studies of the health status of patients with ileoanal pull-through. Thus, our study has identified a new, valid, generic health status measure for this group.

Our study also measured quality of life with a utility measure, the TTO. Our patients rated their quality of life equivalent to having perfect health (median, 1.00), which was significantly better than the quality of life of postesophagectomy patients (median, 0.97) and patients with esophageal disorders such as gastroesophageal reflux and achalasia (median, 0.96) (Figure 3). This may, in part, reflect the improvement in health that patients who once had ulcerative colitis (which may have been associated with the debilitating symptoms of abdominal pain, bleeding, diarrhea, etc.) experience when they are cured of their disease. Furthermore, the excellent score on the TTO (7) may reflect the reassurance obtained with the removal of the colon and the concomitant fear of developing cancer. McLeod et al.[8] measured quality of life of patients with ulcerative colitis undergoing ileoanal pull-through and found that the mean preoperative score in those with moderate disease was 0.49. This group had a mean postoperative score of 1.0, reflecting their improvement after cure.[8] When we compared the results of the TTO to the other health status measures, we found significant correlations between the TTO and the subscales measuring physical functioning on the SIP and the SF-36. These results reflect the excellent health status and quality of life of the patients with ileoanal pull-through and suggest that physical functioning is an important component of HRQL of this group. McLeod et al.[8] also found that the TTO correlated with health status as measured by the SIP, (Pearson product-moment correlation, -0.49). The importance of physical functioning to patients with ileoanal pull-through is further reflected in the significant correlation between number of bowel movements each week and the general health perception subscale of the SF-36, a measure of their beliefs about their health status. However, we found no correlation between the psychosocial subscales of the SIP, the SF-36, and the TTO. This may, in part, be related to the greater variability in patient scores that reflect emotional, mental, and psychosocial health than we found with the physical subscales. For example, scores on the psychosocial subscale of the SIP range from 0 (no dysfunction) to 261 (troubled a great deal). Physical subscale scores range from 0 to 93.4. The psychosocial and mental health subscales of SF-36 reflect similar variability, with scores ranging from 0 (a great deal of dysfunction) to 100 (excellent functioning) on the emotional role subscale. This variability in scores may reflect preoperative emotional and psychosocial dysfunction that persists postoperatively, or may indicate patient response to colectomy. Only a prospective study in which measurements are obtained preoperatively and serially postoperatively will be able to distinguish baseline dysfunction from the effects of colectomy.

Health status and quality-of-life measures have not correlated in other groups. Tsevat et al.[23] measured quality of life with the TTO and used the Specific Activity Scale to measure health status in survivors of myocardial infarction. They found a correlation of -0.03 between these scales, which suggests that the quality of life measured by the TTO was capturing a different component of HRQL than the functional status measure.[20] Likewise, Hays et al.[24] compared the TTO with multi-item HRQL scales that measured physical health, pain, emotional and social functioning, and general health in patients with the human immunodeficiency virus. They found significant correlations with general health perceptions and their measure of pessimism ($r = 0.24$ and -0.21, and

$P < 0.01$ and < 0.05, respectively) but otherwise noted that HRQL profile measures were only weakly correlated with TTO scores,[21] suggesting that the TTO and the health status measures were evaluating different aspects of HRQL. Our results are at variance with these studies. We believe that our findings, like those of McLeod et al.,[8] emphasize the importance of physical function to patients with ileoanal pull-through and the significant correlations (r, 0.46–0.55) between the physical subscales of the SIP and SF-36 show that physical function is a major component of the HRQL of ileoanal pull-through patients. Survivors of myocardial infarction and patients with human immunodeficiency virus identify other factors, which are not measured by the health status measures used in the studies described, as important to their quality of life.

Because there is no disease-specific health status measure for postcolectomy patients, we used generic health status measures in our study. However, another goal of our study was to identify an IBD-specific measure that might address the concerns of ileoanal pull-through patients. We found that the RFIPC correlated with the physical subscale of the SIP, suggesting that the health concerns of patients with ileoanal pull-through are related to their physical functioning. This is further supported by the significant correlations obtained between the RFIPC and the subscales measuring general health perceptions, physical functioning, energy/fatigue, and pain on the SF-36. These correlations reflect the construct validity of the RFIPC as a health status measure for ileoanal pull-through patients. Thus, the RFIPC is disease-specific health status measure that can be used to measure the concerns of patients with ileoanal pull-through.

In summary, the HRQL of patients with ileoanal pull-through is excellent. We have validated a new, widely used and easy-to-administer health status measure, the SF-36, in ileoanal pull-through patients. This instrument can be used by clinicians and researchers to evaluate the HRQL of this group. We have demonstrated that the RFIPC, a disease-specific measure, measures the concerns of patients with ileoanal pull-through and correlates with their health status. Thus, identifying their concerns with the RFIPC and addressing them through counseling and education may improve the health status of this group. Furthermore, RFIPC scores have been correlated with resource utilization of patients with IBD, which suggests that addressing their concerns will not only improve the health status of this group but will decrease health care utilization and costs of treating these patients.[11]

We have identified valid, easy-to-administer health status measures that can be readily applied in the practice setting to more accurately identify disability and concerns of patients with ileoanal pull-through and to provide an objective means to evaluate the results of our interventions on overall function and quality of life. Researchers can use these tools in clinical trials as an additional means of evaluating the impact of their interventions on ileoanal pull-through patients. Future studies will examine their response to changes in health status over time and will correlate health status with healthcare resource utilization.

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